High Rates of Pre-spawn Mortality in Coho Salmon *(Oncorhynchus kisutch)* in Urban Streams in the Puget Sound Basin

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Abstract

Since 1999, unexpectedly large numbers of dead, unspawned adult coho have been found during spawning surveys in urbanized creeks around Puget Sound. Only coho and possibly sockeye (anecdotal evidence only) seem to be affected. The mortalities do not seem to be clustered spatially or temporally. Pathological analysis of affected fish tissue indicates that the cause of death is not related to disease or parasites. There have been observations of neurological symptoms in affected fish, including gaping and convulsions. Preliminary analyses by NOAA Fisheries, Northwest Fisheries Science Center indicate that the dead fish had significantly altered bile chemistry, consistent with exposure to environmental contaminants. In fall 2002, NOAA Fisheries and Seattle Public Utilities (SPU) worked together to conduct intensive daily spawning surveys and tissue sampling in an affected creek (Longfellow Creek, Seattle) and a control reach (Fortson Creek, Snohomish County). The goal of this research was to carefully document the incidence of coho pre-spawning mortality in both urban and non-urban streams, and then to relate the observed mortality to conventional biomarkers of hydrocarbon and pesticide exposures. If tied to degree of urbanization within watersheds, the incidence of this problem could spread as population continues to increase in the Puget Sound/Georgia Basin area.